CLAIMS

1. A catalyst bed for decomposition of monopropellant fuel using a transitional metal catalyst over which the fuel is made to flow; the bed comprising:

a plurality of thin metal plates in a stacked contiguous relation, each such plate having a surface of catalytic material and a plurality of flow-through holes of selected size and location for flow of said fuel axially through said stacked plates, at least a portion of each such plate on a downstream side being etched to permit lateral flow of said fuel between said plates.

2. The catalyst bed recited in claim 1 wherein said plurality of plates comprises a plurality of groups of said plates, each said group being separated from adjacent said groups by a metering plate having flow-through holes that provide reduced open area compared to the flow-through holes of said adjacent groups of said plates.

3. The catalyst bed recited in claim 2 wherein each said metering plate which is positioned more downstream of an upstream metering plate comprises larger flow-through holes than said upstream metering plate.

4. The catalyst bed recited in claim 1 wherein said flow-through holes of adjacent plates are axially offset from plate to plate to promote lateral flow of said fuel between said plates.

5. The catalyst bed recited in claim 1 wherein said etched downstream side of each said plate comprises unetched portions forming support columns for supporting each said plate on an adjacent said plate.

6. The catalyst bed recited in claim 1 wherein said metal plates are substantially circular.

7. The catalyst bed recited in claim 1 wherein said metal plates are bonded to one another to form a monolithic stack.

8. A catalyst converter for promoting the decomposition of a liquid fuel into a gas; the converter comprising:

a plurality of thin metal plates having a surface formed of a catalyst material and stacked axially along a flow path of said fuel from upstream to downstream; each said plate having a plurality of flow-through holes leading from its upstream surface to its downstream surface, the downstream surface of each said plate being at least partially removed to promote lateral flow of said fuel between each pair of adjacent plates.

9. The catalyst converter recited in claim 1 wherein said plurality of plates comprises a plurality of groups of said plates, each said group being separated from adjacent said groups by a metering plate having flow-through holes that provide reduced open area as compared to the flow-through holes of said adjacent groups of said plates.

10. The catalyst converter recited in claim 9 wherein each said metering plate which is positioned more downstream of an upstream metering plate, comprises larger flow-through holes than said upstream metering plate.

11. The catalyst converter recited in claim 8 wherein said flow-through holes of adjacent plates are axially offset from plate to plate to promote lateral flow of said fuel between said plates.

12. The catalyst converter recited in claim 8 wherein said etched downstream side of each said plate comprises unetched portions forming support columns for supporting each said plate on an adjacent said plate.

13. The catalyst converter recited in claim 8 wherein said metal plates are substantially circular.

14. The catalyst converter recited in claim 8 wherein said metal plates are bonded to one another to form a monolithic stack.

15. A catalyst bed comprising:

a generally cylindrical array of catalyst material the axis of which is substantially parallel to the direction of flow of a fluid through said bed, the catalyst material being configured as the surface material of a plurality of stacked, contiguous, thin metal plates having axial flow-through holes of selected size and location to promote uniform flow and contact of said fluid with said catalyst material.

16. The catalyst bed recited in claim 15 wherein at least a portion of each said thin metal plate is removed to provide a gap between adjacent plates to promote lateral flow of said fluid.

17. The catalyst bed recited in claim 15 wherein said plates are segregated into a plurality of groups of said plates and wherein each said group is separated from an adjacent group by a metering plate having flow-through holes the total area of which is less than the total area of the flow-through holes in said plates of said groups.

18. The catalyst bed recited in claim 17 wherein each said metering plate which is positioned more downstream of an upstream metering plate comprises larger flow-through holes than said upstream metering plate.

19. The catalyst bed recited in claim 15 wherein said flow-through holes of adjacent plates are axially offset from plate to plate to promote lateral flow of said fuel between said plates.

20. The catalyst bed recited in claim 1 wherein said removed portion of each said plate comprises unremoved portions forming support columns for supporting each said plate on an adjacent said plate.

21. The catalyst bed recited in claim 15 wherein each said plate is characterized by an open area ratio which is defined as the combined area of the flow-through holes divided by the total area of the plate and wherein the open area ratio of said plates generally increases along said direction of flow.